Letter to the Editor

Disastrous results of indigenous methods of rabies prevention in developing countries

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Dogs and a few other mammalian species such as cats, jackals, monkeys and mongooses live in close proximity to human establishments, which accounts for a large number of animal exposures every year. Canine transmission causes the vast majority of rabies cases in India.[1] In Thailand, nearly 90.6% of rabies cases are caused by canine exposure.[2] One in 10 stray dogs in that country are reported to be infected.[3] To avoid high costs, indigenous methods are often used in place of modern vaccines for the prevention of rabies in developing countries.

Eight patients who initially used different methods of indigenous treatment and later came under the author's care during 1996–1998 were studied. Epidemiologic and clinical history were recorded in detail. The epidemiologic and demographic characteristics were tabulated (Table 1). Laboratory investigations were carried out on biting animals and the bitten victim, whenever possible, to ascertain the cause of death.

All the patients were inhabitants of rural areas in India. The age of the patients varied from 10 to 60 years. Seven patients were bitten by stray dogs and one by an unimmunized family dog. The lower extremity was the site of bite in all patients.

Negri bodies were detected in the brain of one patient and two biting animals. Hydrophobia was evident in all the patients in the terminal stage. The outcome of indigenous treatment was invariably fatal.

Indigenous methods for prevention of rabies are frequently practiced in developing countries. One method commonly employed in India is to apply a charmed 'metal plate' on the back of the bitten patient, accompanied by hymns, mainly to determine the presence of infection (Figure 1). It is believed that the plate remains stuck on the back if infection is present. Patients found to be infected are given oral medicine for prevention of rabies. It is also believed that the plate does not stick if there is no infection or when the patient becomes infection-free after treatment.

Some local practitioners apply broken pieces of 'earthern pot' on the site of animal bite which stick in infected victims. This method was used in cases 2 and 3. Others collect urine in a small earthern pot and put in a drop of charmed mustard oil. The presence of infection is diagnosed from the shape that the oil assumes. The shape of a dog indicates the presence of infection after a dog bite.

Cauterization of animal bite wounds is often practiced. A red-hot iron or copper is applied to the wounds immediately after the bite in order to destroy the viruses at the site of entry by heat. However, by thorough washing with soap and water immediately, a larger number of viruses can be removed from the wound than by cauterization, which acts in a limited area.

In Northern India, local people commonly apply red 'chilli' (capsicum) seeds on the wound which probably act as a counter-irritant. Other local treatment includes applying turmeric (*Curcuma domestica*) leaves and latex of 'arakh' (*Calotropis procera*) plants.

Another interesting method of treatment is to give repeated baths with charmed cow milk throughout the day, accompanied by hymns.

All the patients discussed above used indigenous treatment mainly because it is cheap and easily available in rural areas. On the other hand, tissue-culture vaccines (human diploid cell vaccine, purified vero cell rabies vaccine (PVRV) and purified chick embryo cell vaccine (PCEC)), although available, are beyond the reach of a common man, due to prohibitive cost. The current cost of a course of PVRV and PCEC is equivalent to nearly 50 days pay for an Indian laborer. HDVC is three times more costly.

Oral medicines are often used by traditional healers after mammal bites for prevention of rabies. These medications are mostly herbal preparations. Juice of leaves of *Ocimum sanctum* (tulasi) and sesame oil are commonly used.

Cases 2 and 3 consulted the local practitioner first without attending any clinic, as tribal men strongly believe in indigenous methods of treatment. Cases 4 and 7 received no prophylactic treatment of any kind, as they did not disclose the incident of dog bite, probably out of fear of the parents. This is a common practice among children. Indigenous treatment received by them after onset of symptoms had no effect. Diagnosis of rabies was established in case 4 by detection of Negri bodies in the patient's brain. In cases 5 and 7, Negri bodies were

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Table 1. Nature of exposures and details of indigenous treatment

Case no.	*Age and sex*	*Date and nature of exposure*	*Site of bite*	*Details of indigenous treatment; no vaccine*	*Outcome of indigenous treatment*
1	10F	February 1996. Bite by a stray dog	Left leg	Treated with herbal medicines by a charmer	Died 115 days after bite
2	31M	March 1996. Bite by a stray dog	Right leg	Charmed pieces of 'earthern pot' applied over bite wounds. Herbal medicine used orally	Died 29 days after bite
3	40M	March 1996. Bite by same dog which had bitten case	Left leg	Same	Died 49 days after bite
4	12M	March 1996. Bite by a stray dog	Left leg	Disclosed about dog bite when symptoms appeared. Herbal medicines used orally	Died 93 days after bite. Negri bodies detected in hippocampus
5	60M	November 1997. Bite by a stray dog. Dog killed by villagers	Right thigh and right leg	Charmed metal plate applied Herbal medicine used orally	Died 81 days after bite. Negri bodies found in brain of biting dog
6	10F	February1998. Bite by a stray dog	Left leg	Charmed metal plate applied	Died 44 days after bite
7	15F	May 1998. Bite by an unimmunized family dog	Left foot	Disclosed history of dog bite when symptoms appeared. Herbal medicine used orally	Died 37 days after bite. Negri bodies detected in brain of biting dog
8	12M	July 1998. Bite by a stray dog	Right great toe	Charmed broken pieces of earthern pot applied. Herbal medicine orally	Died 42 days after bite

identified in brain tissues of the biting dogs. In others, diagnosis could not be established because of failure to trace the biting stray animals, refusal of consent for post-mortem examination, or lack of laboratory facilities, but diagnosis was very certain on clinical and epidemiologic grounds. In fact, laboratory investigations need not be insisted upon in all cases in developing countries for purposes of diagnosis, except for research purposes. Reliable epidemiologic history and typical clinical manifestations with hydrophobia in the terminal stage are adequate for diagnosis. Diagnosis is indeed difficult in the prodromal phase of the disease.[4] Even though antemortem diagnosis is possible by examination of corneal epithelial cells[5] or skin biopsy material collected from the nape of the neck using the fluorescent antibody test,[6] the facility is not available in most centers in developing regions of the world.

Health education, particularly among rural folk in developing countries, is a dire need. Such a measure will greatly help to popularize scientific methods of prevention of rabies. There is no doubt that the high cost of modern methods of post-exposure treatment is a prohibitive factor.

Government subsidy will greatly help to reduce the cost of tissue-culture rabies vaccines and rabies immune globulin, which will promote wider use of these products among common people.[7]

REFERENCES

1. Dutta JK. Epidemiologic profile of animal exposures and resultant infection in developing country [Abstract No. 87.003]. In: 8th International Congress on Infectious Disease, Boston, 1998.
2. Wilde H, Chutivonges S, Tepsuthanon W, Choomkasien P, Polswan C, Lumbertdacha B. Rabies in Thailand. Rev Infect Dis 1991; 13:644–652.
3. Wilde H, Chutivonges S, Hemachudha T. Rabies and its prevention. Med J Aust 1994; 160:83–87.
4. Dutta JK. Index of suspicion. Ped in Rev 1998; 19:173–175.
5. Koch FJ, Sagertz JW, Davidson DE et al. Diagnosis of human rabies by the cornea test. Am J Clin Pathol 1975; 63:509–515.
6. Bryceson ADM, Breenwood BM, Warrell DA, et al. Demonstration during life of rabies antigen in humans. J Infect Dis 1975; 131:71–74.
7. Dutta JK. Rabies prevention: cost to an Indian laborer. JAMA 1996; 276:32.